

SECTION C
STATEMENT OF WORK

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TABLE OF CONTENTS

C.1	SUMMARY DESCRIPTION OF WORK	1
C.2	Work Scope	1
C.3	GOVERNMENT FURNISHED FACILITIES AND SERVICES	2
C.3.1	Facilities	2
C.3.2	Instrumentation provided.....	3
C.3.3	Laboratory Information Management Systems (LIMS)	3
C.3.4	Other Government Furnished Services.....	3
C.4	SUPPLEMENTAL INFORMATION	4
C.4.1	Material Control and Accountability	4
C.4.2	Interactions with other DOE offices and other DOE prime contractors.....	4
C.4.3	Quality Assurance (QA) and Quality Control (QC)	4
C.4.4	Technical Authorizations	4
C.4.5	Permits	5

C.1 SUMMARY DESCRIPTION OF WORK

The scope of this contract is to perform the Analytical Services production functions of receiving, handling, analyzing, storing samples, performing special tests and reporting the results of these analyses and tests to the contractors of Department of Energy Offices at the Hanford Nuclear Site near Richland, Washington. These functions will be performed through a contract with the DOE Office of River Protection. The analytical services to be acquired will be performed at the 222-S Laboratory complex located in the 200 West Area of Hanford. These services support cleanup and closure of the Hanford site and are a critical activity in achieving closure goals of all Hanford projects. This scope may also include other DOE work supporting scientific research and other DOE sites.

The successful contractor shall provide these analytical chemistry production services for the Hanford Site projects, operations, and environmental cleanup activities in support of the Hanford Site environmental cleanup and restoration activities.

The contractor is required to annually perform approximately 25,000 inorganic, organic and radionuclide analyses. The analyses will be performed on approximately 3000 intermediate to high level radioactive and/or hazardous samples received from multiple locations and entities on the Hanford site. Samples received may be 300 Rad/hr, with a significant part of that from gamma radiation.

C.2 WORK SCOPE

The work performed by the Analytical Services Production Contractor (ASPC) will be to plan analytical work using priorities from customers, receive samples which are usually highly radioactive, prepare them for analysis, record and track all sample and related waste materials, perform the analyses using necessary quality control and quality assurance, report the results and archive material as required by the customer. Customers at times will require special tests and the ASPC is responsible for providing assistance in developing those test methods and then performing them in the lab. Customers consist of DOE prime contractors who perform program activities primarily at the Hanford site and may include some work from other DOE sites and DOE research.

This work shall be performed while using facilities and infrastructure which are maintained by the Tank Farm Contractor (TFC) and using work processes and work behavior which meets overall Hanford site programs. The ASPC is required to interface with the TFC, customers and managers of these programs in a manner so that the overall Hanford programs and objectives are consistent among all prime contractors. This will require close coordination with customers and the TFC facility and infrastructure provider. Typical interfaces with the TFC will be driven by services provided as identified in Section C.3. Laboratory facilities or services off the Hanford site may be used for this scope if it is demonstrated that all requirements can be met, e.g., contract, packaging, shipping, schedule, etc.

Reference information is provided in an attachment to this section, showing the required capabilities. Future annual workload is expected to be consistent. Past workloads have varied significantly month to month.

Planning shall require use of the priorities and analytical data needs of customers and managing the lab workload in accordance with those needs. Planning also requires readiness to perform new analyses, testing or infrequent analyses when these are defined by the customers.

Analysis of samples shall be performed by the ASPC trained and qualified workforce in accordance with approved procedures, using appropriate test and handling equipment. The currently installed Laboratory Information and Management System (LIMS) shall be used for sample tracking, records and data gathering and reporting. The ASPC will provide Standards Laboratory services for the Hanford Site. This will include preparation and maintenance of required standards and reagents.

Results shall be reported to meet customer's specified needs. The most common formats for Required Data Reporting are as follows:

- Full Data Package including raw data, Data Summary Reports with Method Detection Limits (MDL) and qualifiers, QA data.
- Summary Data Package including Data Summary Reports with MDL
- Summary Data Package with Quality Assurance and Data Upload including Data Summary Reports with MDL, QA qualifiers, and defined electronic deliverables

The ASPC shall perform all work in accordance with existing laws, applicable permits and good practice consistent with safety and quality in the laboratory

The ASPC shall provide annual projections for labor and equipment needs.

A nuclear materials safeguard and security program shall be developed by the ASPC, approved by DOE and implemented.

The ASPC shall develop an Integrated Safety Management System (ISMS) as required in Section H. The ISMS will be limited to the scope of this contract and describe interfaces and interactions with safety programs of other contractors. The ISMS shall be developed by the ASPC and implemented in coordination with the TFC's ISMS to provide overall Integrated Safety Management for the 222-S complex.

C.3 GOVERNMENT FURNISHED FACILITIES AND SERVICES

The ASPC will be provided with facilities, established programs and services to accomplish this scope of work. The ASPC shall integrate these services with the analytical services scope. Facilities and analytical equipment will be provided and maintained as described below. A nuclear safety program implementing a Documented Safety Assessment (DSA), shown in Section J, will also be provided as well as safety management programs identified in the DSA. The ASPC will be required to support implementation of these requirements.

The ASPC is encouraged to review the Government Furnished Equipment and Services during the contract period and make recommendations for improvements or changes in scope that will benefit the overall mission of DOE at the Hanford site.

C.3.1 Facilities

The 222-S complex consists of the 222 S Building, a 70,000 square foot laboratory facility, which includes 11 hot cells for handling and analyzing highly radioactive samples, and the auxiliary buildings that support the analytical chemistry mission.

The analytical services to be acquired will be primarily performed at the 222-S Building with some space in nearby offices available for other personnel. Potential for performing a portion of the analyses off-site exists dependent upon the shipping and handling capabilities of the analytical services performance contractor.

C.3.2 Instrumentation provided

Types of available laboratory equipment that will be provided to the analytical services performance contractor are listed below. About 25% of instrument capacity is currently used in all but the Organic area for GC/MS work where the potential utilization is at approximately 75% capacity. Instrumentation availability is subject to routine downtime for maintenance, repairs and upgrades. In addition to the analytical equipment below the laboratory also has 26 manipulators for sample handling that were purchased during 1993-1994, all of which are operational and in good condition.

Sample Preparation Equipment

- Liquid/liquid extractors
- Solid phase extraction apparatus
- Toxicity Characteristic Leaching Procedure apparatus
- Acid digestion apparatus
- Water digestion apparatus

Inorganic Instrumentation

- Inductively Coupled Plasma/Mass Spectrometer systems (ICP/MS)
- ICP/AES (Atomic Emission Spectrometer systems)
- pH meters
- Ion Chromatographs (IC)
- Thermal Gravimetric Analyzers (TGA)
- Organic Instrumentation:
- Total Organic Carbon analyzers (TOC)
- Gas Chromatographs
- Gas Chromatograph/Mass Spectrometers (GC/MS)

Radiochemistry Instrumentation

- Liquid Scintillation Counters
- Alpha/Beta Proportional Counters, and
- Gamma (GEA) and Alpha Energy Analyzers (AEA)

C.3.3 Laboratory Information Management Systems (LIMS)

ORP will provide use of the comprehensive LIMS to the ASPC. These systems have the capability to upload a large proportion of the analytical data from the instruments to the analytical reporting system after approval by the responsible chemists.

C.3.4 Other Government Furnished Services

Government furnished services will be provided or coordinated through the TFC. The ASPC shall integrate analytical services work scope to support these programs.

- Radiological control program to manage work with radiological exposure and contamination. Radiological Control Technicians (RCTs) to implement the program are provided. The ASPC shall work with RCTs on a daily basis to follow the radiological control program while handling, storing or analyzing samples.
- Nuclear safety program to implement and maintain the Documented Safety Analysis (DSA) and maintain nuclear safety of the laboratory. The ASPC shall comply with the controls, for example paragraph 5.5.1.3 of the DSA, to maintain nuclear safety in the facility.

- Safety management programs required to maintain both personnel and nuclear safety.
- Security program and security personnel to maintain physical security for the laboratory and its inventory. The ASPC shall maintain the personnel and information security program for employees and visitors.
- Emergency Response Program and support infrastructure to integrate the laboratory into the Hanford Site Emergency Response Program.
- Fire Protection Program to maintain the laboratory within the requirements of the approved Fire Hazards Analysis.
- Waste management Program and services. Waste generated in the process of performing analytical services work shall be controlled in accordance with agreements with the Washington Department of Ecology. In general, each hood is a satellite accumulation area with a designated container for waste. Contents of each of these containers must be fully known and documented. Compatibility of waste in the container shall be evaluated before new waste can be added. Disposal of this temporarily stored waste shall also be controlled. Handling and disposition of the waste at this point will be provided as a Government Furnished Service.
- Facility and equipment maintenance. However, the ASPC shall perform daily calibrations and associated analytical maintenance and cleaning of the instruments.
- Regulatory issues and actions shall be coordinated by the TFC.

C.4 SUPPLEMENTAL INFORMATION

C.4.1 Material Control and Accountability

- The ASPC shall be responsible for the special nuclear material contained in the 222-S facility.
- The ASPC shall follow the DOE Order DOE O 474.1A for material control and accountability. A typical Material Control Plan takes about three months for approval. This function will remain with the TFC until the ASPC plan is approved by DOE. Until the plan is approved, the ASPC shall comply with the TFC's approved plan.

C.4.2 Interactions with other DOE offices and other DOE prime contractors

- Analytical services work is performed for the DOE Office of River Protection and all direction shall be provided through that office.
- Daily interaction between the ASPC and other DOE prime contractors shall occur to set priorities, work loads and define expected results from analyses.

C.4.3 Quality Assurance (QA) and Quality Control (QC)

- The QA and QC program for nuclear facilities is required by 10 CFR 830.120.
- The program can be found at the web site <http://www.hanford.gov/anserv/hasqa.html>

C.4.4 Technical Authorizations

- The 222-S lab has an approved technical authorization basis, HNF-12125 dated July 2003, that establishes controls for operations so that safety of the public and workers is maintained.
- The ASPC shall comply with this program and associated safety management programs.

C.4.5 Permits

The ASPC shall comply with all applicable permits.

**ATTACHMENT 1:
REQUIRED SAMPLE PREPARATION AND METHODOLOGY CAPABILITIES**

Required Sample Preparation and Methodology Capabilities

- The ability to receive and handle shielded containers, "pigs" for grab samples; onsite-transfer-casks for tank core samples
- The ability to use manipulators in remotely controlled "hot-cells" to handle highly radioactive/hazardous samples
- Required sample preparation and methodology
- Sample Breakdown
- Homogenize Sample
- Centrifuge Sample
- Composite Sample
- Bulk Density
- Volume of % Centrifuged Solids
- Liquid Weight
- Solid Weight
- Volume of Solid
- Acid Dilution for ICP/AA/Radiochemistry
- Water Digest for ICP/AA/Radiochemistry
- Fusion with KOH
- Water Digest (no acid)

Methodology for Inorganic, Physical Analyses, Total Organic Carbon (TOC)

- Ammonium by Ion Chromatography (IC)/Cations by IC
- DSC exotherms by TA
- Iso Uranium by ICP/Mass Spectrometry(MS)
- Specific Gravity
- % Water by Gravimetric Measurement
- Anions by IC
- ICP Acid Digest/Routine Analysis
- Total Organic Carbon (TOC) Use "TOC" only by Persulfate/Coulometry

Methodology for Organic Analyses

- PCB Sample Preparation
- PCB Analyses (SW846 8082)
- Volatile Analyses (SW846 8260)
- Semivolatile Analyses (SW846 8270)

Methodology for Radionuclide Analyses

- Alpha in liquid sample
- Am 241, Cm 243 by TRU-SPEC Resin
- Plutonium (Pu) 238, 239 by TRU-SPEC Resin
- GEA
- Strontium (Sr) 89/90 High Level

Note: Additional analytical methodology must frequently be implemented. The ASPC shall work with the TFC personnel to mutually develop this new methodology.